AMENDMENTS TO THE CLAIMS

1 - 3. (Cancelled)

4. (Previously Presented) A UTRAN (UMTS (Universal Mobile Telecommunication System) Terrestrial Radio Access Network) transmitter in a mobile communication system having at least four antennas, comprising:

a first adder connected to a first antenna that adds a first spread signal, obtained by spreading a first symbol pattern with a first orthogonal code, to a second spread signal obtained by spreading the first symbol pattern with a second orthogonal code;

a second adder connected to a second antenna that adds the first spread signal to a third spread signal obtained by spreading a first inverted symbol pattern obtained by phase-inverting the first symbol pattern with a second symbol pattern;

a third adder connected to a third antenna that adds a fourth spread signal, obtained by spreading the second symbol pattern being orthogonal with the first symbol pattern with the first orthogonal code, to a fifth spread signal obtained by spreading the second symbol pattern with the second orthogonal code;

a fourth adder connected to a fourth antenna that adds the fourth spread signal to a sixth spread signal obtained by spreading a second inverted symbol pattern obtained by phase-inverting the second symbol pattern with the second orthogonal code;

a fifth adder connected to a fifth antenna that adds a seventh spread signal obtained by spreading the first symbol pattern with a third orthogonal code, to an eighth spread signal obtained by spreading the first symbol pattern with a fourth orthogonal code;

a sixth adder connected to a sixth antenna that adds the seventh spread signal to a ninth spread signal obtained by spreading the first inverted symbol pattern with the fourth orthogonal code;

a seventh adder connected to a seventh antenna that adds a tenth spread signal, obtained by spreading the second symbol pattern with the third orthogonal code, to an eleventh spread signal obtained by spreading the second symbol pattern with the fourth orthogonal code; and

an eighth adder connected to an eighth antenna that adds the tenth spread signal to a twelfth spread signal obtained by spreading the second inverted symbol pattern with the fourth orthogonal code.

5. (Original) The UTRAN transmitter as claimed in claim 4, wherein the first orthogonal code is different from the third orthogonal code and the second orthogonal code is different from the fourth orthogonal code.

6. (Original) The UTRAN transmitter as claimed in claim 4, wherein when the first orthogonal code is identical to the third orthogonal code and the second orthogonal code is identical to the fourth orthogonal code, then a first scrambling code applied to output signals of the first to fourth antennas is set to be different from a second scrambling code applied to output signals of the fifth to eighth antennas.

7. (Original) The UTRAN transmitter as claimed in claim 4, wherein the transmitter selects only the number of antenna's transmission of specific signals among the output signals of the first to eighth antennas, when the number of antennas is less than eight.

8. (Previously Presented) The UTRAN transmitter as claimed in claim 4, wherein each of the symbol patterns is one of a pilot symbol pattern and a data symbol pattern.

9. (Cancelled)

10. (Cancelled)

11 - 13. (Cancelled)

14. (Previously Presented) A data transmission method in a UTRAN (UMTS (Universal Mobile Telecommunication System) Terrestrial Radio Access Network) transmitter for a mobile communication system having at least four antennas, comprising the steps of:

adding a first spread signal, obtained by spreading a first symbol pattern with a first orthogonal code, to a second spread signal, obtained by spreading the first symbol pattern with a second orthogonal code, to generate a first added signal and transmitting the first added signal through a first antenna;

adding the first spread signal to a third spread signal obtained by spreading a first inverted symbol pattern obtained by phase-inverting the first symbol pattern with the second orthogonal code, to generate a second added signal and transmitting the second added signal through a second antenna;

adding a fourth spread signal obtained by spreading a second symbol pattern, being orthogonal with the first symbol pattern with the first orthogonal code, to a fifth spread signal, obtained by spreading the second symbol pattern with the second orthogonal code, to generate a third added signal and transmitting the third added signal through a third antenna;

adding the fourth spread signal to a sixth spread signal obtained by spreading a second inverted symbol pattern obtained by phase-inverting the second symbol pattern with the second orthogonal code, to generate a fourth added signal and transmitting the fourth added signal through a fourth antenna;

adding a seventh spread signal, obtained by spreading the first symbol pattern with a third orthogonal code, to an eighth spread signal, obtained by spreading the first symbol pattern with a fourth orthogonal code, to generate a fifth added signal and transmitting the fifth added signal through a fifth antenna;

adding the seventh spread signal to a ninth spread signal obtained by spreading the first inverted symbol pattern with the fourth orthogonal code, to generate a sixth added signal and transmitting the sixth added signal through a sixth antenna;

adding a tenth spread signal, obtained by spreading the second symbol pattern with the third orthogonal code, to an eleventh spread signal, obtained by spreading the second symbol

pattern with the fourth orthogonal code, to generate a seventh added signal and transmitting the seventh added signal through a seventh antenna; and

adding the tenth spread signal to a twelfth spread signal obtained by spreading the second inverted symbol pattern with the fourth orthogonal code, to generate an eighth added signal and transmitting the eighth added signal through an eighth antenna.

15. (Original) The data transmission method as claimed in claim 14, wherein the first orthogonal code is different from the third orthogonal code and the second orthogonal code is different from the fourth orthogonal code.

16. (Original) The data transmission method as claimed in claim 14, wherein when the first orthogonal code is identical to the third orthogonal code and the second orthogonal code is identical to the fourth orthogonal code, then a first scrambling code applied to output signals of the first to fourth antennas is different from a second scrambling code applied to output signals of the fifth to eighth antennas.

17. (Original) The data transmission method as claimed in claim 14, further comprising the step of controlling transmission of specific signals among the output signals of the first to eighth antennas when the number of antennas is less than eight.

18. (Cancelled)

19. (Cancelled)

20 - 22. (Cancelled)

23. (Previously Presented) A UE (User Equipment) receiver in a mobile communication system, wherein the UE receiver receives signals transmitted from a UTRAN transmitter supporting a transmit diversity technique having at least four antennas, comprising:

a plurality of despreaders for generating a first despread signal despread using a first orthogonal code and a first symbol pattern of the received signals, generating a second despread signal despread using the first orthogonal code and a second symbol pattern being orthogonal with the first symbol pattern, generating a third despread signal dispread using a second orthogonal code being orthogonal with the first orthogonal code and the first symbol pattern, generating a fourth despread signal despread using the second orthogonal code and the second symbol pattern, generating a fifth despread signal despread using a third orthogonal code and the first symbol pattern, generating a sixth despread signal despread using the third orthogonal code and the second symbol pattern, generating a seventh despread signal despread using a fourth orthogonal code and the first symbol pattern, and generating an eighth despread signal despread using the fourth orthogonal code and the second symbol pattern; and

a plurality of adders for generating a first channel estimation signal by adding the first despread signal to the third despread signal, generating a second channel estimation signal by adding the second despread signal to the fourth despread signal, generating a third channel estimation signal by subtracting the third despread signal from the first despread signal, generating a fourth channel estimation signal by subtracting the fourth despread signal from the second despread signal, generating a fifth channel estimation signal by adding the fifth spread signal to the seventh despread signal, generating a sixth channel estimation signal by adding the sixth despread signal to the eighth despread signal, generating a seventh channel estimation signal by subtracting the seventh despread signal from the fifth despread signal, and generating an eighth channel estimation signal by subtracting the eighth despread signal from the sixth despread signal.

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24. (Original) The UE receiver as claimed in claim 23, wherein the symbol pattern is one of a pilot symbol pattern and a data symbol pattern.

25 - 29. (Cancelled)

12

30. (Previously Presented) A data reception method in a UE (User Equipment) receiver for a mobile communication system, wherein the UE receiver receives signals transmitted from a UTRAN transmitter supporting a transmit diversity technique having at least four antennas, comprising the steps of:

despreading the received signals into a first despread signal using a first orthogonal code and a first symbol pattern, despreading the received signals into a second despread signal using the first orthogonal code and a second symbol pattern being orthogonal with the first symbol pattern, despreading the received signals into a third despread signal using the second orthogonal code and the first symbol pattern, despreading the received signal into a fourth despread signal using the second orthogonal code and the second symbol pattern, despreading the received signals into a fifth despread signal using a third orthogonal code and the first symbol pattern, despreading the received signals into a sixth despread signal using the third orthogonal code and the second symbol pattern, despreading the received signal into a seventh despread signal using a fourth orthogonal code and the first symbol pattern, and despreading the received signals into an eighth despread signal using the fourth orthogonal code and the second symbol pattern; and

estimating a first channel signal by adding the first despread signal to the third despread signal, estimating a second channel signal by adding the second despread signal to the fourth despread signal, estimating a third channel signal by subtracting the third despread signal from the first despread signal, estimating a fourth channel signal by subtracting the fourth despread signal from the second despread signal, estimating a fifth channel signal by adding the fifth spread signal to the seventh despread signal, estimating a sixth channel signal by adding the sixth despread signal to the eighth despread signal, estimating a seventh channel signal by subtracting the seventh despread signal from the fifth despread signal, and estimating an eighth channel signal by subtracting the eighth despread signal from the sixth despread signal.

13 12

31. (Original) The data reception method as claimed in claim 30, wherein the symbol pattern is one of a pilot symbol pattern and a data symbol pattern.

32-36. (Cancelled)